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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/049,672	04/30/2002	Yasushi Kurata	566.411991X00	7706

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EXAMINER	
DEO, DUY VU NGUYEN	
ART UNIT	**PAPER NUMBER**
1765	

DATE MAILED: 10/04/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/049,672	KURATA ET AL.	
	Examiner	Art Unit	
	DuyVu n Deo	1765	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 July 2004*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *23-58* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *23-58* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *1/13/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.
>
> (e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(ε) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

2. Claims 24, 26-39, 41, 50-52, 58 are rejected under 35 U.S.C. 102(e) as being anticipated by Lee et al. (US 6,171,352).

Lee describes a polishing composition comprising: an oxidizing agent such as H2O2 (col. 3, line 5; col. 6, line 44); a protective-film-forming agent of benzotriazole and/or its derivatives (col. 4, line 19); an organic acid of glycolic acid (col. 3, line 23); deionized water (col. 4, line 11); 1-15 % wt of abrasive that can be any commercially available such as silica and alumina

(claimed colloidal silica and alumina) (col. 2, line 66-col. 3, line 2; col. 3, line 67-col. 4, line 1); pH is from 1-6 (col. 4, line 31-40) (this would include claimed pH of 3 or less); and the oxidizing agent concentration is from 1-15 % by weight (col. 2, line 64), this would include concentration within claimed 0.01-3 %wt or 0.01-1.5 %wt.

Referring to claims 27, 28, the composition further comprises polyacrylic acid copolymer or salts thereof (col. 2, line 47). This would read on claimed water-soluble polymer.

Referring to claims 34-36, 39, Lee describes the method for polishing material including Cu and Ta (col. 4, line 38; col. 7, line 54).

Referring to claims 37, 38, 51, 52 Lee's composition would have the polishing-rate ratio between different materials disclosed in claims 37, 38, 51, 52. Support for this presumption is found by the facts that the composition includes the same compounds with the same concentrations as that of the claims. The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594.

3. Claims 24, 26, 30-41, 50-52, 58 are rejected under 35 U.S.C. 102(e) as being anticipated by Kaufman et al. (US 5,95,997).

Kaufman describes a polishing composition comprising: a 0.3-12 % wt oxidizing agent such as H2O2 (col. 4, line 14, 15); a protective-film-forming agent of benzotriazole (col. 4, line 21); an organic acid of citric acid (col. 6, line 6); deionized water (col. 4, 30); 1-15 % wt of abrasive that can be any commercially available such as silica and alumina (claimed colloidal silica and alumina) (col. 7, line 1-col. 8, line 21); pH is from 2-12 (col. 8, line 23, 24) (this would include claimed pH of 3 or less).

Referring to claims 37, 38, 51, 52Lee's composition would have the polishing-rate ratio between different materials disclosed in claims 37, 38, 51, 52. Support for this presumption is found by the facts that the composition includes the same compounds with the same concentrations as that of the claims. The burden is upon the applicant to prove otherwise. *In re Fitzgerald*, 205 USPQ 594.

Referring to claims 34-36, 39, and 40, Kaufman teaches of polishing a Ta/TaN/Cu substrates (col. 5, line 14).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

5. Claim 40, 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee or Kaufman as applied to claims 38, 51 above, and further in view of admitted prior art.

Even though Lee doesn't describe polishing a surface having a wiring and a barrier layer; however, he teaches of forming wiring circuits (col. 1, line 10-17) which is well known to one skill in the art to have a wiring and a barrier layer as described by admitted prior art in page 6, line 1-5 of the specification. Therefore, it would have been obvious for one skill in the art at the time of the invention to polish a wiring and a barrier in order to form a wire circuit with a reasonable expectation of success.

6. Claims 23, 25, 42-49, 54-57 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lee or Kaufman as applied to claim 24 above, and further in view of Hardy et al. (US 6,238,592).

Referring to the average size of the abrasive, Hardly describes a average particle size of 50 nm or less (col. 9, line 65-col. 10, line 5). It would have been obvious for one skill in the art to determine the particle size in light of Hardly because Hardly further describes other processing parameters, such as average size of the abrasive, that is silent in Lee.

Even though applied prior art above does not describe standard deviation of the particle size distribution in a value of more than 5nm. It would have been obvious for one skill in the art to determine the standard deviation of the particle size distribution through test runs in order to provide a slurry for the polishing with a reasonable expectation of success.

Referring to claim 23, Hardly further teaches that the polishing medium can contain abrasive or the abrasive can be fixed to abrasive article (col. 10, line 3-7). In the latter case, the polishing medium would not contain abrasive grains. This shows that either way would be equivalent and obvious at the time of the invention.

Referring to claims 54-57, even though applied prior art doesn't describe the pH of the oxidizing agent; however, it would be obvious to one skilled in the art that oxidizing agent pH can be any value as long as it provides the final pH of the slurry within the range as suggested by the applied prior art.

Response to Arguments

7. Referring to applicant's argument that Lee and Kaufman do not describe claimed pH of range and oxidizing agent concentration, Lee teaches pH including 1-3 (col. 4, line 31-40) which

reads on claimed pH of 3 or less; and the oxidizing agent concentration including 1-3 % by weight (col. 2, line 64), which reads on claimed 0.01-3 %wt. Kaufman teaches oxidizing agent such as H2O2 including 0.3-3 %wt (col. 4, line 14, 15), which reads on claimed 0.01-3 %wt, and pH includes 2-3 (col. 8, line 23, 24), which reads on claimed pH of 3 or less.

In response to applicant's argument that these processing parameters (the pH of less than 3 and oxidizing agent concentration of 0.01-3 %wt) provide better results of dishing and thinning levels, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

Referring to applicant's argument that Le doesn't describe a protective-film-forming agent, please see col. 4, line 19 where he teaches using a protective-film-forming agent of benzotriazole and/or its derivatives.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

Claim Rejections - 35 USC § 112

8. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

9. Claims 54-57 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Applicant has not shown wherein the specification teaching of the oxidizing agent has a pH of 0.15-3.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DuyVu n Deo whose telephone number is 571-272-1462. The examiner can normally be reached on 6:00-3:30; with alternate Friday off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nadine Norton can be reached on 571-272-1465. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

DVD
9/30/04